

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 4-6 and 14-16 are requested to be cancelled.

Claims 1, 7, 11, and 17 are currently being amended.

No claims are being added.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-3, 7-13 and 17-20 are now pending in this application.

Claim 1 has been amended to incorporate the limitations of canceled claims 4-6, and thus represents original claim 6 rewritten in independent format. Similarly, claim 11 has been amended to incorporate the limitations of canceled claims 14-16, and thus represents original claim 16 rewritten in independent format. Claim 11 was also amended to correct the minor informality objected to in the Office Action by adding "medium" after "computer readable."

In the Office Action, claims 1, 4, 5, 11, 14 and 15 were rejected under 35 U.S.C. § 102(e) as being anticipated by Srivastava (U.S. Patent No. 5,999,737). This rejection is now moot in view of the amendments of claims 1 and 11 incorporating the recitations of claims 6 and 16, respectively.

The rejections of claims 2 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Srivastava in view of Mulchandani et al. (U.S. Patent No. 6,112,025) and claims 3 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Srivastava in view of Bacon et al. (U.S. Patent No. 6,041,179) are also moot in view of the amendments of claims 1 and 11 incorporating the recitations of claims 6 and 16, respectively.

Lastly, claims 6-10 and 16-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Srivastava in view of Click, Jr. et al. (U.S. Patent No. 6,408,433). Claim 1, as amended, recites in part that a method for removing dead code in code fragments of a program comprises processing a first code fragment and storing first information generated during this processing indicative of whether an instruction for assigning a register in a first code fragment is possibly live. Claim 1 further recites that the first information includes a pointer to each instruction for assigning a register that is possibly live for an exit of the first code fragment and a first register mask having a plurality of positions, each position corresponding to a respective register, wherein a bit at a position is set if the respective register is assigned in an instruction pointed to by a pointer included in the first information.

Click discloses that a compiler includes a register allocator that is arranged to generate calling convention code (column 8, lines 5-6). In addition, the location of incoming arguments may be specified in register masks, and each incoming argument may have an associated register mask (column 7, lines 14-17).

Click further discloses that a register allocation for building a calling convention may have an associated register mask, which is a collection of bits that represent valid registers or, in other words, a number space arranged to represent all possible machine registers (column 7, lines 33-41). Each bit of the register mask is set to indicate whether a particular register is valid with respect to the variable with which the register mask is associated (column 7, lines 51-54). Specifically, a bit is set to '1' if the associated register is valid, and to '0' if not valid (column 7, lines 55-64).

After register masks are obtained, an intersection of register masks are collected for live ranges, where a live range is a range or distance over which a particular variable remains accessible (column 8, lines 15-20). The intersection of register masks identifies registers that are used by more than one value (column 8, lines 20-22). After the intersection of registers masks is obtained, the register allocation is performed (column 8, lines 34-35).

In the rejection, the Examiner implicitly admits that Srivastava fails to disclose or suggest the register mask as recited in amended claim 1 (and as originally recited in canceled

claim 6). In addition, the Examiner states that Click discloses a register mask, and asserts that this register mask corresponds to the register mask as recited in claim 1. Applicants respectfully disagree with the Examiner's assertion, and thus even if combinable with Srivastava, Click fails to cure the deficiencies of Srivastava.

According to claim 1, a bit is set for a respective register of the first register mask if there is an instruction for assigning that register that is possibly live for an exit of the first code fragment. In contrast to claim 1, a bit in the register mask of Click is set if the variable associated to a register is valid. The validity of a variable associated with a register has nothing to do with whether an instruction for assigning a register is possibly live for an exit of a code fragment. Accordingly, claim 1 is patentably distinguishable from the combination of Srivastava and Click.

Claims 2-3 and 7-10 are also patentably distinguishable from the combination of Srivastava and Click by virtue of their dependence from claim 1, as well as their additional recitations. For example, according to claim 7, a bit is set for a respective register in the second register mask if the register is assigned in the second fragment before being read. As in claim 1, the validity of a variable associated with a register as disclosed in Click has nothing to do with whether or not a register is assigned in a code fragment before being read. Moreover, the fact that the bits in the first and second register masks of claims 1 and 7 are set based on different criteria clearly shows that the register mask of Click cannot correspond to both of the recited first and second register masks. Accordingly, claim 7 further distinguishes the claimed invention from the combination of Srivastava and Click.

Furthermore, claim 8 recites eliminating an instruction for assigning a register in the first code fragment if the positions corresponding to the register in the first and second register masks are both set. In contrast to claim 8, Click discloses that the intersection of register masks determines the live range of a variable, which Click defines as a range or distance over which a particular variable remains accessible, and merely identifies registers that are used by more than one value. Determining the range of accessibility of a variable and which registers are used by more than one value clearly has nothing to do with eliminating an instruction for assigning a register in the first code fragment if the positions corresponding to

the register in the first and second register masks are both set. Accordingly, claim 8 also further distinguishes the claimed invention from the combination of Srivastava and Click.

Claim 11 is patentably distinguishable from the combination of Srivastava and Click for at least the same reasons as claim 1. Claims 12-13 and 17-20 are also patentably distinguishable from the combination of Srivastava and Click by virtue of their dependence from claim 11, as well as their additional recitations.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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